What is claimed is:

1. A method for determining a weight of an aircraft comprising:

determining a flight regime in accordance with one or more inputs;

selecting a neural net in accordance with said flight regime; and

determining said weight using said neural net.

2. The method of Claim 1, wherein said neural net is trained offline prior to determining said weight of said aircraft.

3. The method of Claim 2, wherein said determining said weight of said aircraft is performed during operation of said aircraft.

4. The method of Claim 1, wherein said neural net is one of a plurality of neural nets.

5. The method of Claim 1, wherein said neural net is a feedforward neural net.

6. The method of Claim 5, wherein said neural net includes a single hidden layer.

7. The method of Claim 6, wherein said neural net has a same set of interconnections between each neuron in said hidden layer and an input layer, and a same set of interconnection between said each neuron and an output layer.

8. The method of Claim 7, wherein each of said neurons in said hidden layer utilizes a same sigmoidal activation function.

9. The method of Claim 8, wherein said neural net includes between 20 and 35 neurons in said hidden layer.

10. The method of Claim 1, wherein said weight is used as an input to another process.

11. The method of Claim 1, wherein the flight regime is one of a plurality of flight regimes that are mutually exclusive from one another.

12. The method of Claim 1, wherein the flight regime is manually selected.

13. The method of Claim 1, wherein the flight regime is an effective flight regime including one or more actual flight regimes using the same set of one or more neural nets.

14. The method of Claim 1, wherein one or more neural net inputs are used as inputs to said neural net selected, and the one or more neural net inputs include at least

one derived parameter that is determined based on mathematical and physical relationships of measured data.

15. The method of Claim 14, wherein the one or more neural net inputs are a first number of derived parameters determined using a second number of raw data values, the second number being greater than said first number.

16. The method of Claim 14, wherein said one or more neural net inputs include at least one of the following:

Corrected Vertical Acceleration (cN_z) represented as:

$$cN_z = 1 + N_z - \left(\frac{1}{\cos[\phi]}\right)$$

Where

N_Z is Vertical Acceleration;
Ø is Roll Attitude;

Torque Coefficient (Cq) represented as:

$$Cq = \frac{Q}{\rho A(\Omega R)^2} = \frac{412.0/100.0 * (Eng1Q + Eng2Q)/2.0}{.0023769 * \sigma * \pi R^2 * (2 * \pi * \frac{Nr}{100} * \frac{257.887}{60} * R)^2}$$

Where Q is total torque (RPM);
ρ is density (lb-sec^2/ft^4);
A is the area of the main rotor disc (ft^2);
Ω is the rotation speed of the rotor (rad/s);
R is the radius of the main rotor disc (ft);
Nr is the main rotor speed (%);
σ is the density ratio;

Advance Ratio (μ) is represented as:

$$\mu = \frac{V}{\Omega R} = \frac{KIAS * 1.6890}{2 * \pi * \frac{Nr}{100} * \frac{257.887}{60}}$$

Where KIAS is indicated airspeed in knots;

Climb rate over tip speed (μ_c) is represented as:

$$\mu_c = \frac{V_c}{\Omega R} = \frac{ROC/60}{2*\pi*\frac{Nr}{100}*\frac{257.887}{60}}$$

Where ROC is rate of climb (ft/min);

Density Ratio (σ) is represented as:

$$\sigma = 0.0023769*(\frac{288.15}{OAT+273.15})*(1-(0.0019812*\frac{Hp}{288.15}))^{5.256}$$

Where OAT is outside air temperature (°C);
Hp is Barometric Altitude (ft).

17. The method of Claim 16, wherein said neural net inputs include roll attitude and pitch attitude in accordance with the selected flight regime.

18. The method of Claim 16, wherein one of said neural net inputs is a derived parameter based on at least one of roll attitude and pitch attitude in accordance with the selected flight regime.

19. The method of Claim 1, wherein the neural net is included in a gross weight processor.

20. The method of Claim 1, wherein the gross weight processor is included on the aircraft for which said weight is determined.

21. The method of Claim 1, wherein the gross weight processor is included at a ground location and communicates with said aircraft.

22. The method of Claim 1, wherein the one or more inputs include at least one of: a sensor measurement, manual input, data from a storage location.

23. The method of Claim 1, further comprising:

determining said flight regime as a hover flight regime in accordance with the following input parameters: landing flag, takeoff flag, weight on wheels, yaw rate, rate of climb, pitch attitude, roll attitude, drift velocity, ground speed, airspeed, and control reversal flag, wherein said landing flag indicates whether said aircraft is landing, said takeoff flag indicates whether said aircraft is in takeoff mode, and said control reversal flag indicates whether said aircraft is in a reversal mode.

24. The method of Claim 23, wherein said landing flag indicates no landing, said takeoff flag indicates no takeoff, said weight on wheels indicates no weight on wheels, said control reversal flag indicates that said aircraft is not in reversal mode, said yaw rate has an approximate value within the inclusive range of: $-2.5 \leq$ yaw rate 2.5 degrees/second, said pitch attitude is approximately 10 degrees, said rate of climb is approximately within the inclusive range of: $-200 \leq$ rate of climb ≤ 200 feet/minute, said roll attitude approximates a value within the inclusive range of: $-6 \leq$ roll attitude ≤ 3 degrees, said drift velocity approximates a value within the inclusive range of: $-7 \leq$ drift velocity ≤ 7 knots said ground speed approximates a value within the inclusive range of:

$-7 \leq$ ground speed ≤ 7 knots, said airspeed is an approximate value less than or equal to 38 knots.

25. The method of Claim 24, further comprising:

determining that said aircraft is in a hover flight regime at a first point in time; and

determining that said aircraft remains in said hover flight regime at a second later point in time if said airspeed at said second later point in time does not exceed 43 knots.

26. The method of Claim 1, further comprising:

determining said flight regime as a forward flight regime in accordance with the following input parameters: landing flag, takeoff flag, weight on wheels, yaw rate, rate of climb, pitch attitude, roll attitude, airspeed, control reversal flag, and sideslip, wherein said landing flag indicates whether said aircraft is landing, said takeoff flag indicates whether said aircraft is in takeoff mode, and said control reversal flag indicates whether said aircraft is in a reversal mode.

27. The method of Claim 26, wherein said landing flag indicates no landing, said takeoff flag indicates no takeoff, said weight on wheels indicates no weight on wheels, said control reversal flag indicates that said aircraft is not in reversal mode, said yaw rate has an approximate value within the inclusive range of: $-5 \leq$ yaw rate ≤ 5 degrees/second, said pitch attitude is within the inclusive range of: $-10 \leq$ pitch attitude ≤ 10 degrees, said rate of climb is approximately within the inclusive range of: $-500 \leq$ rate of climb ≤ 500

feet/minute, said roll attitude approximates a value within the inclusive range of: $-10 \leq$ roll attitude ≤ 10 degrees, said side slip approximates a value within the inclusive range of: $-0.05 \leq$ side slip ≤ 0, said airspeed is an approximate value greater than 38 knots.

28. The method of Claim 27, further comprising:

determining that said aircraft is in a forward flight regime at a first point in time; and

determining that said aircraft remains in said forward flight regime at a second later point in time if said airspeed at said second later point in time is greater than 33 knots.

29. The method of Claim 1, further comprising:

determining said flight regime as a turn flight regime in accordance with the following input parameters: landing flag, takeoff flag, weight on wheels, roll attitude, airspeed, and rate of climb, wherein said landing flag indicates whether said aircraft is landing and said takeoff flag indicates whether said aircraft is in takeoff mode.

30. The method of Claim 29, wherein said landing flag indicates no landing, said takeoff flag indicates no takeoff, said weight on wheels indicates no weight on wheels, said rate of climb is approximately within the inclusive range of: $-500 \leq$ rate of climb $\leq$ 500 feet/minute, said roll attitude approximates a value within the inclusive range of: $-10 \leq$ roll attitude ≤ 10 degrees, said airspeed is an approximate value greater than 38 knots.

31. The method of Claim 30, further comprising:

determining that said aircraft is in a turn flight regime at a first point in time; and

determining that said aircraft remains in said turn flight regime at a second later point in time unless at least one of the following is true: roll attitude is outside of the range -7,+13, and said airspeed is less than 36.

32. The method of Claim 1, wherein said one or more inputs are scaled within a predetermined range.

33. The method of Claim 1, further comprising:

determining a sensitivity of said weight with respect to a parameter used in determining said weight.

34. The method of Claim 33, wherein said sensitivity of said weight with respect to said parameter is determined in accordance with a partial derivative of said weight with respect to said parameter.

35. The method of Claim 34, wherein said weight is determined using a neural network and represented as:

$$\hat{W}_g(z) = \gamma\left[b2 + \sum_{i=1}^{P} W2_i * \gamma\left(b1_i + \sum_{j=1}^{m} W1_{i,j} * z_j\right)\right]$$

where z is a vector of inputs, p is a number of neurons in the hidden layer, m is a number of inputs, $W1_{i,j}$ is a weight of the j^{th} input to the i^{th} neuron in the hidden layer, $b1_i$ is a bias added to the i^{th} neuron, $W2_i$ is a weight of the i^{th} neuron to the output neuron, b2 is a bias added to an output neuron, and γ is the tanh function.

36. The method of Claim 35, wherein, said neural network is a feedforward neural net with one hidden layer containing p sigmoidal neurons, and the sensitivity is represented as:

$\delta\hat{W}_g(z)/\delta z_k =$

$$\gamma'\left[b2+\sum_{i=1}^{P}W2_i*\gamma\left(b1_i+\sum_{j=1}^{m}W1_{i,j}*z_j\right)\right]*\sum_{i=1}^{P}W2_i*W1_{i,k}*\gamma'\left(b1_i+\sum_{j=1}^{m}W1_{i,j}*z_j\right)$$

where γ' is $\cosh^{-2}$.

37. The method of Claim 36, wherein said sensitivity with respect to an input vector z having said parameter that is a kth parameter, z_k, is determined as a partial derivative of said weight with respect to the kth parameter evaluated in accordance with the input vector.

38. A method of determining a weight of an aircraft comprising:

receiving one or more values; and

determining said weight using a Kalman filter wherein said one or more values are used as inputs to said Kalman filter.

39. The method of Claim 38, wherein one or more measurements are input to said Kalman filter, and the method further comprising:

determining a flight regime in accordance with one or more regime measurements;

selecting a function based on said flight regime; and

determining a covariance associated with one of said measurements in accordance with said function.

40. The method of Claim 39, wherein said flight regime is the hover flight regime, and said function determines said covariance associated with a weight estimate.

41. The method of Claim 40, wherein said function determines said covariance in accordance with body accelerations of said aircraft along x and z axes, roll attitude, pitch attitude, airspeed and altitude.

42. The method of Claim 38, wherein one or more measurements are input to said Kalman filter, said one or more measurements including at least one of: a weight estimate, and engine fuel flow rate.

43. The method of Claim 42, wherein said weight estimate is a predetermined value based on vehicle flight and performance data.

44. The method of Claim 42, wherein said weight estimate is based on manually entered data representing a sum gross weight of said aircraft.

45. The method of Claim 39, wherein said flight regime is manually determined.

46. The method of Claim 39, wherein said flight regime is determined in accordance with a predetermined mapping that maps one or more values to a particular flight regime, wherein a given set of one or more inputs values uniquely maps to a flight regime.

47. The method of Claim 38, wherein said Kalman filter produces an output used as an input to another component.

48. A system for determining a weight of an aircraft comprising:

a regime recognizer that determines a regime indicator in accordance with a portion of said one or more inputs; and

a gross weight estimator that determines said weight of said aircraft, said gross weight estimator including at least one of: a Kalman filter, and one or more neural nets, and using at least one of said Kalman filter and a first of said one or more neural nets in determining said weight.

49. The system of Claim 48, wherein said system further comprises:

an input processor that processes one or more inputs producing one or more processed inputs, said one or more inputs including at least one sensor measurement; and a portion of said one or more processed inputs are neural net inputs used by said one or more neural nets, and said gross weight estimator including:

a neural net selector that selects a neural net in accordance with said regime indicator.

50. The system of Claim 49, wherein said regime recognizer is included in said input processor.

51. The system of Claim 48, wherein said gross weight estimator includes one or more neural nets whose output, when said one or more neural nets is selected in accordance with said flight regime indicator, is an input to said Kalman filter.

52. A method for determining an aircraft parameter comprising:

determining a flight regime in accordance with one or more inputs;

selecting a neural net in accordance with said flight regime; and

determining said aircraft parameter using said neural net.

53. The method of Claim 52, wherein said neural net uses at least one derived parameter determined from a relationship between one or more raw input values.

54. A method of determining an aircraft parameter comprising:

receiving one or more values; and

determining said aircraft parameter using a Kalman filter wherein said one or more values are used as inputs to said Kalman filter.

55. The method of Claim 54, further comprising:

determining a flight regime in accordance with one or more regime measurements;

selecting a function based on said flight regime; and

determining a covariance associated with one of said measurements in accordance with said function.

56. A system for determining an aircraft parameter comprising:

a regime recognizer that determines a regime indicator in accordance with a portion of said one or more inputs; and

an aircraft parameter generator that determines said aircraft parameter, said aircraft parameter generator including at least one of: a Kalman filter, and one or more neural nets, and using at least one of said Kalman filter and a first of said one or more neural nets in determining said aircraft parameter.

57. A computer program product for determining a weight of an aircraft comprising code that:

determines a flight regime in accordance with one or more inputs;

selects a neural net in accordance with said flight regime; and

determines said weight using said neural net.

58. The computer program product of Claim 57, wherein said neural net is trained offline prior to determining said weight of said aircraft.

59. The computer program product of Claim 58, wherein said code that determines said weight of said aircraft is executed during operation of said aircraft.

60. The computer program product of Claim 57, wherein said neural net is one of a plurality of neural nets.

61. The computer program product of Claim 57, wherein said neural net is a feedforward neural net.

62. The computer program product of Claim 61, wherein said neural net includes a single hidden layer.

63. The computer program product of Claim 62, wherein said neural net has a same set of interconnections between each neuron in said hidden layer and an input layer, and a same set of interconnection between said each neuron and an output layer.

64. The computer program product of Claim 63, wherein each of said neurons in said hidden layer utilizes a same sigmoidal activation function.

65. The computer program product of Claim 64, wherein said neural net includes between 20 and 35 neurons in said hidden layer.

66. The computer program product of Claim 57, wherein said weight is used as an input to another process.

67. The computer program product of Claim 57, wherein the flight regime is one of a plurality of flight regimes that are mutually exclusive from one another.

68. The computer program product of Claim 57, wherein the flight regime is manually selected.

69. The computer program product of Claim 57, wherein the flight regime is an effective flight regime including one or more actual flight regimes using the same set of one or more neural nets.

70. The computer program product of Claim 57, wherein one or more neural net inputs are used as inputs to said neural net selected, and the one or more neural net inputs include at least one derived parameter that is determined based on mathematical and physical relationships of measured data.

71. The computer program product of Claim 70, wherein the one or more neural net inputs are a first number of derived parameters determined using a second number of raw data values, the second number being greater than said first number.

72. The computer program product of Claim 70, wherein said one or more neural net inputs include at least one of the following:

Corrected Vertical Acceleration (cN_z) represented as:

$$cN_z = 1 + N_z - \left(\frac{1}{\cos[\phi]}\right)$$

Where

N_Z is Vertical Acceleration;
$\emptyset$ is Roll Attitude;

Torque Coefficient (Cq) represented as:

$$Cq = \frac{Q}{\rho A(\Omega R)^2} = \frac{412.0/100.0 * (Eng1Q + Eng2Q)/2.0}{.0023769 * \sigma * \pi R^2 * (2 * \pi * \frac{Nr}{100} * \frac{257.887}{60} * R)^2}$$

Where Q is total torque (RPM);
ρ is density (lb-sec^2/ft^4);
A is the area of the main rotor disc (ft^2);
Ω is the rotation speed of the rotor (rad/s);
R is the radius of the main rotor disc (ft);
Nr is the main rotor speed (%);
σ is the density ratio;

Advance Ratio (μ) is represented as:

$$\mu = \frac{V}{\Omega R} = \frac{KIAS * 1.6890}{2 * \pi * \frac{Nr}{100} * \frac{257.887}{60}}$$

Where KIAS is indicated airspeed in knots;

Climb rate over tip speed (μ_c) is represented as:

$$\mu_c = \frac{V_c}{\Omega R} = \frac{ROC / 60}{2 * \pi * \frac{Nr}{100} * \frac{257.887}{60}}$$

Where ROC is rate of climb (ft/min);

Density Ratio (σ) is represented as:

$$\sigma = 0.0023769 * (\frac{288.15}{OAT + 273.15}) * (1 - (0.0019812 * \frac{Hp}{288.15}))^{5.256}$$

Where OAT is outside air temperature (°C);
Hp is Barometric Altitude (ft).

73. The computer program product of Claim 72, wherein said neural net inputs include roll attitude and pitch attitude in accordance with the selected flight regime.

74. The computer program product of Claim 72, wherein one of said neural net inputs is a derived parameter based on at least one of roll attitude and pitch attitude in accordance with the selected flight regime.

75. The computer program product of Claim 57, wherein the neural net is included in a gross weight processor.

76. The computer program product of Claim 57, wherein the gross weight processor is included on the aircraft for which said weight is determined.

77. The computer program product of Claim 57, wherein the gross weight processor is included at a ground location and communicates with said aircraft.

78. The computer program product of Claim 57, wherein the one or more inputs include at least one of: a sensor measurement, manual input, data from a storage location.

79. The computer program product of Claim 57, further comprising code that:

determines said flight regime as a hover flight regime in accordance with the following input parameters: landing flag, takeoff flag, weight on wheels, yaw rate, rate of climb, pitch attitude, roll attitude, drift velocity, ground speed, airspeed, and control reversal flag, wherein said landing flag indicates whether said aircraft is landing, said takeoff flag indicates whether said aircraft is in takeoff mode, and said control reversal flag indicates whether said aircraft is in a reversal mode.

80. The computer program product of Claim 79, wherein said landing flag indicates no landing, said takeoff flag indicates no takeoff, said weight on wheels indicates no weight on wheels, said control reversal flag indicates that said aircraft is not in reversal mode, said yaw rate has an approximate value within the inclusive range of: $-2.5 \leq$ yaw rate 2.5 degrees/second, said pitch attitude is approximately 10 degrees, said rate of climb is approximately within the inclusive range of: $-200 \leq$ rate of climb ≤ 200 feet/minute, said roll attitude approximates a value within the inclusive range of: $-6 \leq$ roll attitude ≤ 3 degrees, said drift velocity approximates a value within the inclusive

range of: $-7 \leq$ drift velocity ≤ 7 knots said ground speed approximates a value within the inclusive range of: $-7 \leq$ ground speed ≤ 7 knots, said airspeed is an approximate value less than or equal to 38 knots.

81. The computer program product of Claim 80, further comprising code that:

determines said aircraft is in a hover flight regime at a first point in time; and

determines said aircraft remains in said hover flight regime at a second later point in time if said airspeed at said second later point in time does not exceed 43 knots.

82. The computer program product of Claim 57, further comprising:

code that determines said flight regime as a forward flight regime in accordance with the following input parameters: landing flag, takeoff flag, weight on wheels, yaw rate, rate of climb, pitch attitude, roll attitude, airspeed, control reversal flag, and sideslip, wherein said landing flag indicates whether said aircraft is landing, said takeoff flag indicates whether said aircraft is in takeoff mode, and said control reversal flag indicates whether said aircraft is in a reversal mode.

83. The computer program product of Claim 82, wherein said landing flag indicates no landing, said takeoff flag indicates no takeoff, said weight on wheels indicates no weight on wheels, said control reversal flag indicates that said aircraft is not in reversal mode, said yaw rate has an approximate value within the inclusive range of: $-5 \leq$ yaw rate ≤ 5 degrees/second, said pitch attitude is within the inclusive range of: $-10 \leq$ pitch attitude ≤ 10 degrees, said rate of climb is approximately within the inclusive range

of: $-500 \leq$ rate of climb ≤ 500 feet/minute, said roll attitude approximates a value within the inclusive range of: $-10 \leq$ roll attitude ≤ 10 degrees, said side slip approximates a value within the inclusive range of: $-0.05 \leq$ side slip ≤ 0, said airspeed is an approximate value greater than 38 knots.

84. The computer program product of Claim 83, further comprising code that:

determines said aircraft is in a forward flight regime at a first point in time; and

determines said aircraft remains in said forward flight regime at a second later point in time if said airspeed at said second later point in time is greater than 33 knots.

85. The computer program product of Claim 57, further comprising code that:

determines said flight regime as a turn flight regime in accordance with the following input parameters: landing flag, takeoff flag, weight on wheels, roll attitude, airspeed, and rate of climb, wherein said landing flag indicates whether said aircraft is landing and said takeoff flag indicates whether said aircraft is in takeoff mode.

86. The computer program product of Claim 85, wherein said landing flag indicates no landing, said takeoff flag indicates no takeoff, said weight on wheels indicates no weight on wheels, said rate of climb is approximately within the inclusive range of: $-500 \leq$ rate of climb ≤ 500 feet/minute, said roll attitude approximates a value within the inclusive range of: $-10 \leq$ roll attitude ≤ 10 degrees, said airspeed is an approximate value greater than 38 knots.

87. The computer program product of Claim 86, further comprising code that:

determines said aircraft is in a turn flight regime at a first point in time; and

determines said aircraft remains in said turn flight regime at a second later point in time unless at least one of the following is true: roll attitude is outside of the range -7,+13, and said airspeed is less than 36.

88. The computer program product of Claim 57, wherein said one or more inputs are scaled within a predetermined range.

89. The computer program product of Claim 57, further comprising code that:

determines a sensitivity of said weight with respect to a parameter used in determining said weight.

90. The computer program product of Claim 89, wherein said sensitivity of said weight with respect to said parameter is determined in accordance with a partial derivative of said weight with respect to said parameter.

91. The computer program product of Claim 90, wherein said weight is determined using a neural network and represented as:

$$\hat{W}_g(z) = \gamma\left[b2 + \sum_{i=1}^{P} W2_i * \gamma\left(b1_i + \sum_{j=1}^{m} W1_{i,j} * z_j \right)\right]$$

where z is a vector of inputs, p is a number of neurons in the hidden layer, m is a number of inputs, $W1_{i,j}$ is a weight of the j^{th} input to the i^{th} neuron in the hidden layer, $b1_i$ is a

bias added to the i^{th} neuron, $W2_i$ is a weight of the i^{th} neuron to the output neuron, b2 is a bias added to an output neuron, and γ is the tanh function.

92. The computer program product of Claim 91, wherein, said neural network is a feedforward neural net with one hidden layer containing p sigmoidal neurons, and the sensitivity is represented as:

$\delta\hat{W}_g(z)/\delta z_k =$

$$\gamma'\left[b2+\sum_{i=1}^{p}W2_i*\gamma\left(b1_i+\sum_{j=1}^{m}W1_{i,j}*z_j\right)\right]*\sum_{i=1}^{p}W2_i*W1_{i,k}*\gamma'\left(b1_i+\sum_{j=1}^{m}W1_{i,j}*z_j\right)$$

where γ' is $\cosh^{-2}$.

93. The computer program product of Claim 92, wherein said sensitivity with respect to an input vector z having said parameter that is a kth parameter, z_k, is determined as a partial derivative of said weight with respect to the kth parameter evaluated in accordance with the input vector.

94. A computer program product that determines a weight of an aircraft comprising code that:

receives one or more values; and

determines said weight using a Kalman filter wherein said one or more values are used as inputs to said Kalman filter.

95. The computer program product of Claim 94, wherein one or more measurements are input to said Kalman filter, and the computer program product further comprising code that:

determines a flight regime in accordance with one or more regime measurements;

selects a function based on said flight regime; and

determines a covariance associated with one of said measurements in accordance with said function.

96. The computer program product of Claim 95, wherein said flight regime is the hover flight regime, and said function determines said covariance associated with a weight estimate.

97. The computer program product of Claim 96, wherein said function determines said covariance in accordance with body accelerations of said aircraft along x and z axes, roll attitude, pitch attitude, airspeed and altitude.

98. The computer program product of Claim 94, wherein one or more measurements are input to said Kalman filter, said one or more measurements including at least one of: a weight estimate, and engine fuel flow rate.

99. The computer program product of Claim 98, wherein said weight estimate is a predetermined value based on vehicle flight and performance data.

100. The computer program product of Claim 98, wherein said weight estimate is based on manually entered data representing a sum gross weight of said aircraft.

101. The computer program product of Claim 95, wherein said flight regime is manually determined.

102. The computer program product of Claim 95, wherein said flight regime is determined in accordance with a predetermined mapping that maps one or more values to a particular flight regime, wherein a given set of one or more inputs values uniquely maps to a flight regime.

103. The computer program product of Claim 94, wherein said Kalman filter produces an output used as an input to another component.

104. A computer program product for determining an aircraft parameter comprising code that:

determines a flight regime in accordance with one or more inputs;

selects a neural net in accordance with said flight regime; and

determines said aircraft parameter using said neural net.

105. The computer program product of Claim 104, wherein said neural net uses at least one derived parameter determined from a relationship between one or more raw input values.

106. A computer program product that determines an aircraft parameter comprising code that:

receives one or more values; and

determines said aircraft parameter using a Kalman filter wherein said one or more values are used as inputs to said Kalman filter.

107. The computer program product of Claim 106, further comprising code that

determines a flight regime in accordance with one or more regime measurements;

selects a function based on said flight regime; and

determines a covariance associated with one of said measurements in accordance with said function.